



**Rules and  
Regulations for  
the Classification  
of Naval Ships,  
January 2013**

**Notice No. 2**

Effective Date of Latest  
Amendments:

See page 1

Issue date: October 2013

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# **RULES AND REGULATIONS FOR THE CLASSIFICATION OF NAVAL SHIPS, *January 2013***

## **Notice No. 2**

This Notice contains amendments within the following Sections of the *Rules and Regulations for the Classification of Naval Ships, January 2013*. The amendments are effective on the dates shown:

<b><i>Volume</i></b>	<b><i>Part</i></b>	<b><i>Chapter</i></b>	<b><i>Section</i></b>	<b><i>Effective date</i></b>
1	1	2	3	1 January 2014
3	2	2	1, 2, 3, 4	1 January 2014
3	3	6	1, 2, 3, 4, 5	1 January 2014

It will be noted that the amendments also include corrigenda, which are effective from the date of this Notice.

The *Rules and Regulations for the Classification of Naval Ships, January 2013* are to be read in conjunction with this Notice No. 2. The status of the Rules is now:

Rules for Naval Ships	Effective date:	January 2013
Notice No. 1	Effective date:	1 July 2013
Notice No. 2	Effective date:	1 January 2014

## Volume 1, Part 1, Chapter 2

### Classification Regulations

Effective date 1 January 2014

#### ■ Section 3

### Character of Classification and Class notations

#### 3.9 Other notations

**3.9.12 POL Pollution Prevention.** This notation will be assigned to naval ships which demonstrate that the pollution prevention arrangements on board that incorporate the functional requirements and objectives of the applicable IMO International Conventions and that have been accepted by LR in accordance with LR's Rules. The notation provides Naval Administrations with a voluntary independent assessment of their ships' compliance with IMO's environmental conventions.

~~3.9.16 —EP.~~ This notation will be assigned where the environmental protection arrangements for prevention of pollution of the sea and of the air demonstrate compliance with the Rules. Supplementary characters ~~A~~ Anti-fouling coatings, ~~B~~ Ballast water management, ~~F~~ Protected fuel tanks, ~~G~~ Grey water, ~~N~~ Oxides of nitrogen in exhaust emissions, ~~R~~ Refrigeration systems, ~~S~~ Oxides of sulphur in exhaust emissions and ~~O~~ Oily bilge water reflect compliance with additional requirements.

**3.9.16 ENV.** This notation will be assigned where the environmental protection arrangements demonstrate compliance with one or more characters as described in the Rules. Available characters include: **A** Anti-fouling coatings; **BWT** Ballast water treatment; **GW** Grey water and sewage; **IHM** Inventory of hazardous materials (ship recycling); **NOx-1**, **NOx-2**, **NOx-3** Emissions of nitrogen oxides; **OW** Oily water management; **P** Oil tanks in protected locations; **RS** Refrigeration Systems; **SOx** emissions of sulphur oxides.

~~3.9.17 —EP.~~ This notation will be assigned when the environmental protection arrangements are in accordance with the requirements of another recognised classification society and are broadly equivalent to the LR Environmental Protection Rule requirements. Prior to assignment of the notation, an audit, in accordance with the requirements in Vol 3, Pt 2, Ch 2, 4.1.3 and 4.1.4 of the Rules, is to be undertaken by LR to confirm that the necessary Environmental Protection procedures are in place and implemented effectively.

*Existing paragraphs 3.9.18 to 3.9.23 have been renumbered 3.9.17 to 3.9.22.*

## Volume 3, Part 2, Chapter 2

### Environmental Protection

Effective date 1 January 2014

#### ■ Section 1

### General requirements

#### 1.1 Application

**1.1.4** LR is to be advised of any matter that relates to the environmental performance of the ship that would affect the assignment of the **EP ENV** class notation. The requirements of the Rules for the **POL** notation included in Pt 3, Ch 6 are to be complied with as part of demonstrating compliance with these Rules.

**1.1.5** It is a prerequisite for assignment of the **ENV** notation that the ship is classed with LR, and as a minimum the requirements for achieving **POL(I,AFS)** are to be complied with.

#### 1.2 **EP ENV** class notation

~~1.2.1~~ —Section 2 states the minimum requirements to be met for assignment of the ~~EP~~ notation.

~~1.2.2~~ —Section 3 contains additional requirements. Ships complying with these requirements will be eligible for one or more of the following associated supplementary characters, as applicable:

- ~~A~~ —Anti-fouling coatings.
- ~~B~~ —Ballast water management.
- ~~F~~ —Protected fuel tanks.
- ~~G~~ —Grey water.
- ~~N~~ —Oxides of nitrogen (NO<sub>x</sub>) exhaust emissions.
- ~~R~~ —Refrigeration systems.
- ~~S~~ —Oxides of sulphur (SO<sub>x</sub>) exhaust emissions.
- ~~O~~ —Oily bilge water.

<b>1.2.1</b>	<b>ENV</b> notation is assigned when the requirements for one or more of the following characters are complied with:
<b>A</b>	Anti-fouling coatings;
<b>BWT</b>	Ballast water treatment;
<b>GW</b>	Grey water and sewage;
<b>IHM</b>	Inventory of Hazardous Materials (ship recycling);
<b>NOx-1, NOx-2, NOx-3</b>	Emissions of nitrogen oxides;
<b>OW</b>	Oily water management;
<b>P</b>	Oil tanks in protected locations;
<b>RS</b>	Refrigeration Systems;
<b>SOx</b>	Emissions of sulphur oxides.

### 1.3 Information to be submitted

1.3.1 The following are to be submitted:

- One copy of all plans and information listed in 1.3.4.
- Two copies of the Operational Procedures.
- One copy of every Certificate.
- One copy of any information relating to the environmental performance of the ship, which may influence the assignment of the **EP** notation.

1.3.2 Certificates:

- MARPOL certificates or certification, as applicable.
- Interim Engine International Air Pollution Prevention (EIAPP) Certificate or statement of compliance with the NO<sub>x</sub> emission requirements of MARPOL Annex VI.
- Incinerator certificate or statement of compliance with the requirements of MARPOL, Annex IV, Regulation 16.
- Sewage system and, where fitted, sewage treatment system statement of compliance with the requirements of USCG 33 CFR 159 and/or MARPOL 73/78 Annex IV.

1.3.3 Operational procedures:

- NO<sub>x</sub> emission control, as applicable.
- Oil fuel management for the control of SO<sub>x</sub> emissions.
- Refrigerant management.
- Oil pollution prevention measures.
- Garbage management.
- Sewage treatment and discharge control.
- Precautionary measures to minimise the transfer of non-nature organisms in ballast water.
- Ballast water management.

1.3.4 Information and plans:

- Details of engine type, rated power and intended use for all installed engines.
- Details of NO<sub>x</sub> control arrangements, as applicable. Arrangements of permanently installed refrigeration systems (including those used for chilled water, air conditioning, domestic store rooms and chiller units).
- Capacity of refrigeration system.
- Details of intended refrigerant(s).
- Details of fire-extinguishing media to be used in fixed fire-fighting systems and portable extinguishers.
- Bilge holding, waste oil and sludge tank capacities and piping arrangements.
- Arrangements of oil loading and discharge connections together with associated drip trays and drainage systems.
- Oil fuel storage, settling and service tank high level alarms/overflow systems.
- Details of sewage treatment and handling systems.
- Capacity of sewage holding and/or treatment system.
- ~~Maximum numbers of crew and embarked personnel.~~

- ~~Details of incinerator arrangements, as applicable, associated piping systems, control and monitoring equipment.~~
- Hull coating system and leaching rate.
- Ballast water treatment arrangements, as applicable (for supplementary **B** character only).
- Any information relating to the environmental performance of the ship, which may influence the assignment of the **EP** notation.
- Arrangements of protected oil tanks (for supplementary **F** character only).
- ~~Details of grey water treatment plant and effluent quality (for supplementary **G** character only).~~

Existing sub-Section 1.4 has been renumbered 1.3.

### 1.4 In-service records

~~1.4.1~~ 1.4.1 Records demonstrating the effective implementation of the operational procedures specified in ~~1.3.3~~ Section 2, as applicable, are to be maintained.

~~1.4.2~~ 1.4.2 These records are to be kept on board for a minimum period of three years, in a readily accessible form, and are to be available for inspection by LR Surveyors, as required.

Existing Sections 2 and 3 have been deleted.

## Section 2

### ENV characters

#### 2.1 Anti-fouling coatings – A character

2.1.1 For assignment of the **A** character, the anti-fouling system applied to the ship's hull is to be listed as non-biocidal or biocide-free in the Lloyd's Register List of Approved Products.

2.1.2 The following plans and documents are to be submitted:  
AFS Certificate or equivalent.

#### 2.2 Ballast Water Treatment – BWT character

2.2.1 For the assignment of the **BWT** character the following requirements are to be met.

2.2.2 A ballast water management treatment system is to be installed, utilised and approved in accordance with MEPC.174(58).

2.2.3 A ballast water management plan, in accordance with the Guidelines for the Development of Ballast Water Management Plans included within MEPC.127(53) and approved by LR, shall be on board and effectively implemented.

2.2.4 A ballast water record book for the purpose of recording all ballast water operations and use of the treatment system is to be available on board and maintained.

2.2.5 The requirements for the safe integration of BWT systems are included in Vol 2, Pt 7, Ch 2,11 of the Naval Ship Rules.

2.2.6 The following plans and documents are to be submitted:

- (a) Approved ballast water management plan;
- (b) Ballast water treatment system manual and drawings showing the ballast water treatment system arrangements;
- (c) IMO Type Approval certificate for the installed ballast water treatment system.

## 2.3 Grey water and sewage – GW character

2.3.1 For assignment of the **GW** character where a plant for the treatment of grey water is installed, the plant discharge effluent is to meet the standards specified in 2.3.2 or 2.3.4, as applicable. The **GW** character will also be assigned where grey water is retained on board in dedicated holding tank(s) for discharge ashore, subject to the requirements specified in 2.3.5 to 2.3.9 being met.

2.3.2 The capacity of the sewage treatment system is to be sufficient for the maximum number of persons on board. The minimum capacity is to be 15 litres/day/person for black water and 135 litres/day/person for grey water.

2.3.3 Where it is not intended that the effluent be recycled or re-used for any purpose, the effluent of the grey water treatment plant is to meet the following standards:

- (a) Thermotolerant coliforms:  
The geometric mean of the thermotolerant coliform count of samples of effluent taken during a test period is not to exceed 100 thermotolerant coliforms/100 ml as determined by membrane filter, multiple tube fermentation or an equivalent analytical procedure.
- (b) Total suspended solids:
  - Where the equipment is tested on shore, the geometric mean of the total suspended solids content of the samples of effluent taken during the test period is not to exceed 35 mg/l;
  - Where the equipment is tested on board the ship, the geometric mean of the total suspended solids content of the samples of effluent taken during the test period is not to exceed the suspended solids content of the ambient (flushing) water used on board plus 35 mg/l.  
The method of testing is to be as given in MEPC.159(55).
- (c) Biochemical Oxygen Demand (BOD5) and chemical oxygen demand (COD):
  - The geometric mean of a 5-day Biochemical Oxygen Demand (BOD5) is not to exceed 25 mg/l. The chemical oxygen demand (COD) is not to exceed 125 mg/l. Test methods are to be ISO 15705:2002 for COD and ISO 5815-1:2003 for carbonaceous BOD5 or other internationally accepted equivalent test standards.
- (d) pH: the pH of the samples of effluent taken during the test period is to be between 6 and 8,5.

- (e) Zero or non-detected values: for thermotolerant coliforms, zero values are to be replaced with a value of 1 thermotolerant coliform/100 ml to allow the calculation of the geometric mean. For total suspended solids, BOD5 and COD values below the limit of detection are to be replaced with one half the limit of detection to allow the calculation of the geometric mean.

2.3.4 Where it is intended that the effluent of the grey water treatment plant be re-used or recycled for any purpose, the effluent is to meet the potable water quality standards of the Naval Authority.

2.3.5 As an alternative to treatment, where grey water is retained on board in dedicated holding tank(s) for discharge ashore, the holding tank(s) is to be of adequate capacity, taking into account the operation of the ship, the number of persons on board and other relevant factors. Each tank is to be fitted with a means to open the tank, means to verify visually the contents of the tank and a high level alarm.

2.3.6 Means are to be provided to aerate the tanks to prevent the development of anaerobic conditions, taking into account MSC/Circ.648 *Guidelines for the Operation, Inspection and Maintenance of Ship Sewage Systems*.

2.3.7 Ventilation pipes from the grey water treatment system and, where provided, from holding tank(s) are to be independent of other ventilation systems.

2.3.8 A suitable piping system from the grey water treatment system or holding tank(s) is to be provided to allow discharge to shore reception facilities. The discharge pipe is to terminate with a standard discharge connection complying with the requirements of MARPOL Annex IV, Regulation 10. Any connection from the grey water system to the sewage discharge is to be via a screw-down non-return valve.

2.3.9 Records of grey water treatment and/or discharge are to be maintained. A single record book may be utilised for both grey water and sewage records. Records detailing discharges from the holding tank(s) are to include:

- (a) the date, location and quantity of grey water discharged from the holding tank(s) either ashore or at sea;
- (b) rate of discharge of untreated grey water;
- (c) distance from land and ship's speed, when untreated grey water is discharged to sea.

2.3.10 Procedures for the cleaning and safe entry of grey water treatment systems and holding tanks, including the use of suitable personal protective equipment, are to be provided and implemented.

2.3.11 The following plans and documents are to be submitted:

- (a) Drawings showing the grey water and sewage system arrangements;
- (b) Treatment system manual and documentation demonstrating that the grey water system meets the requirements for thermotolerant coliforms, total suspended solids, biochemical oxygen demand, chemical oxygen demand, and pH (if treatment system fitted);
- (c) Document showing the grey water holding tank is of adequate capacity.

## 2.4 Inventory of hazardous materials – IHM character

2.4.1 For assignment of the **IHM** character, the ship is to possess an inventory of hazardous materials in compliance with Regulation 5 of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.

2.4.2 The inventory is to be independently verified by LR.

2.4.3 Procedures covering maintenance of the inventory of hazardous materials throughout the ship's life are to be established and implemented. The procedures are to address, *inter alia*, new installations containing hazardous materials specified in appendices 1 and 2 of the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships and relevant changes in the ship's structure and equipment.

2.4.4 The following plans and documents are to be submitted:

- Inventory of hazardous materials certificate of compliance;
- Procedures for maintaining the inventory of hazardous materials.

## 2.5 Emissions of nitrogen oxides – NOx-1, NOx-2, NOx-3 characters

2.5.1 For assignment of the **NOx-1** or **NOx-2** character, the total weighted value of NO<sub>x</sub> emissions from all installed diesel engines defined within 2.2.1 is not to exceed 80 per cent of the total weighted NO<sub>x</sub> emission limits specified in MARPOL Annex VI, Regulation 13.

2.5.2 The total weighted emission value for the ship (WV) is to be calculated as follows:

$$WV_{[ship]} = \frac{WAEV_{[cert]}}{WAEV_{[IMO]}}$$

where

$$WAEV_{[cert]} = \frac{\sum_{n=1}^n (NO_{x[cert]} P)}{\sum_{n=1}^n (P)}$$

$$WAEV_{[IMO]} = \frac{\sum_{n=1}^n (NO_{x[IMO]} P)}{\sum_{n=1}^n (P)}$$

$n$  = the number of individual engines on board the ship

$P$  = the rated power, in kW, of each individual installed engine

$NO_{x[cert]}$  = the certified NO<sub>x</sub> emission value, in g/kWh, for each individual engine

$NO_{x[IMO]}$  = the NO<sub>x</sub> emission limit value, in g/kWh, of each individual engine, in g/kWh, applicable at the date of construction of the ship, or installation date of the engine, as applicable, as specified in Regulation 13 of Annex VI to MARPOL.

2.5.3 For ships constructed before 1 January 2011, the **NOx1** character will be assigned when:

$$\frac{WAEV_{[cert]}}{WAEV_{[IMO]}} \leq 0,8$$

For ships constructed on or after 1 January 2011, the **NOx2** character will be assigned when:

$$\frac{WAEV_{[cert]}}{WAEV_{[IMO]}} \leq 0,8$$

2.5.4 For assignment of the **NOx-3** character, all installed diesel engines with an individual output power greater than 130 kW, other than those used solely for emergency purposes, and associated NO<sub>x</sub> emission abatement systems are to be certified as meeting the Tier 3 NO<sub>x</sub> emission limits specified in MARPOL Annex VI, Regulation 13.

2.5.5 Equipment and systems used to control NO<sub>x</sub> emission levels are to:

- be arranged so that failure will not prevent continued safe operation of the engine;
- be operated in accordance with manufacturer's instructions;
- be designed, constructed and installed to ensure structure integrity and freedom from significant vibration;
- be designed to include adequate hatches for inspection and maintenance purposes; and
- be instrumented to record operation. Records of operation and the degree of control are to be maintained.

Alternative control arrangements will be given special consideration.

2.5.6 Procedures covering the use and maintenance of the equipment and systems used to control NO<sub>x</sub> are to be established and implemented. Records are to be maintained which demonstrate the operation of the equipment and systems and the resultant level of NO<sub>x</sub> emissions to the atmosphere.

2.5.7 Where engines constructed before 1 January 2000 are not certified in accordance with MARPOL Annex VI, the test procedures and measurement method are to be in accordance with the Simplified Measurement Method or Direct Measurement and Monitoring Method given in Chapter 6 of the NO<sub>x</sub> Technical Code.

2.5.8 In the case where the individual engines are 'family' or 'group' engines, as defined in the NO<sub>x</sub> Technical Code, the respective certified emission value is to be taken as that of the relevant Parent Engine.

2.5.9 The following plans and documents are to be submitted:

- For supplementary characters **NOx-1** and **NOx-2**:  
Technical documentation to demonstrate that the total weighted value of NO<sub>x</sub> emissions from all installed diesel engines (excluding emergency generator and engines with an individual power output of less than 130 kW) does not exceed 80 per cent of the applicable MARPOL Annex V limits;



- (b) For supplementary character **NOx-3**:  
Technical documentation, including certification, to demonstrate all diesel engines (excluding emergency generator and engines with an individual power output of less than 130 kW) comply with MARPOL Annex VI Tier III limits.

## 2.6 Oily bilge water, OW character

2.6.1 For assignment of the **OW** character, the loading or discharge connections and vent pipes/overflows associated with oil fuels, lubricating oils, hydraulic oils and other oils are to be fitted with drip trays. Drip trays fitted to loading or discharge connections are to be fitted with closed drainage systems except on tankers, where alternative arrangements will be considered.

2.6.2 Oil fuel storage, settling and service tanks are to be fitted with high level alarms and/or acceptable overflow systems.

2.6.3 Procedures covering the handling of all oils and oily wastes are to be established and implemented. As a minimum, these are to cover:

- (a) loading, storage and transfer of oil fuels, lubricants, hydraulic oil, thermal heating oil and drummed oil products;
- (b) storage, transfer, discharge and disposal of oily mixtures contained in the bilge holding and waste oil tanks and machinery space bilges;
- (c) recovery of any oil spilled on decks.

2.6.4 All drainage from machinery space bilges is to be discharged ashore, except under exceptional circumstances.

2.6.5 Adequate capacity for storage of oily bilge water between discharges ashore is to be provided.

2.6.6 As an alternative to discharging bilges ashore, discharge to sea is permitted where it can be demonstrated that the oil-on-water content of the water discharged is less than 5 ppm. In this case, the bilge alarm, set at 5 ppm, is to be recalibrated or retested every five years by the manufacturer, or other acceptable alternative, and full records of the recalibration or retesting are to be kept on board.

2.6.7 Full records of all oily water discharges to shore and to sea are to be kept.

2.6.8 The following plans and documents are to be submitted:

- (a) Drawings showing the arrangements of non-cargo oil loading and discharge connections, and tank vent pipes/overflows associated with fuel oils, together with associated drip trays and drainage systems;
- (b) Drawings showing the oil fuel storage, settling and service tank high level alarms/overflow systems;
- (c) Drawings showing the bilge holding, waste oil and sludge tank capacities and piping arrangements;
- (d) Oil spill prevention procedures including list of equipment provided for the collection and recovery of spilled oil;
- (e) Explanation of the provision that has been made for storage of oily bilge water (for ships that discharge oily water ashore);
- (f) Type approval certificate for the oily water separator (for ships that discharge oily water to sea).

## 2.7 Oil tanks in protected locations, P character

2.7.1 For the assignment of the **P** character, all oil fuel tanks, lubricating oil tanks and hydraulic oil tanks are to be located in a protected location away from the ship's side or bottom shell plating.

2.7.2 The location of tanks is to be in accordance with the requirements relating to oil fuel tank protection given in MARPOL Annex I, Regulation 12A.

2.7.3 Main engine lubricating oil drain tanks and fuel overflow tanks are excluded.

2.7.4 Arrangements providing equivalent protection will be given special consideration.

2.7.5 Suction wells may protrude below oil fuel tanks provided they are as small as possible and the distance between the tank bottom and the ship's bottom shell plating is not reduced by more than 50 per cent.

2.7.6 The following plans and documents are to be submitted:

- Drawings showing the arrangement of fuel oil, lubricating oil and hydraulic oil tanks and associated suction wells.

## 2.8 Refrigeration systems, RS character

2.8.1 These requirements apply to all permanently installed refrigeration and air-conditioning installations on board. These requirements do not apply to stand-alone refrigerators, freezers and ice makers used in galleys, pantries, bars and crew accommodation.

2.8.2 The use of chlorofluorocarbons (CFCs) in existing, and hydrochlorofluorocarbons (HCFCs) in new, refrigeration or air-conditioning installations is prohibited.

2.8.3 If halocarbon refrigerants are used, they are to have an Ozone Depleting Potential (ODP) rating of zero and a Global Warming Potential (GWP) of less than 1950, based on a 100-year time horizon.

2.8.4 Systems are to be arranged with suitable means of isolation so that maintenance, servicing or repair work may be undertaken without releasing the refrigerant charge into the atmosphere. Unavoidable minimal releases are acceptable when using recovery units.

2.8.5 For the purposes of refrigerant recovery, the compressors are to be capable of evacuating a system charge into a liquid receiver. Additionally, recovery units are to be provided to evacuate a system either into the existing liquid receiver or into cylinders dedicated to this purpose. The number of cylinders is to be sufficient to contain the complete charge between points of isolation in the system.

2.8.6 Where different refrigerants are in use they are not to be mixed during evacuation of systems.



2.8.7 Refrigerant leakage is to be minimised by leak prevention and periodic leak detection procedures. The frequency of leak detection and the maximum allowable annual leakage rate is dependent on the charge of each system and is specified in Table 2.2.2.

**Table 2.2.2 Refrigerant leak testing – Maximum periodicity**

Charge size	Periodicity	Leakage
under 3 kg	6 months	10%
3–30 kg	3 months	10%
30–300 kg	Monthly	5%
Over 300 kg	Monthly	3%

2.8.8 Records are to be maintained demonstrating that leak testing is carried out, in accordance with the periodicity specified in Table 2.2.2, by qualified personnel holding relevant certification, using either direct or indirect measuring methods and calibrated instruments where applicable.

2.8.9 A leak detection system appropriate to the refrigerant is to be provided to monitor continuously the spaces into which the refrigerant could leak. An alarm is to be activated to give warning in a permanently manned location when the concentration of refrigerant in the space exceeds a predetermined limit (25 ppm for ammonia, 300 ppm for halogenated fluorocarbons). Remedial measures to repair the leakage are to be implemented as soon as practicable after an alarm is activated. Each leak detection system is to be checked at least once every 12 months to ensure proper functionality. The system is to be maintained and calibrated in accordance with the manufacturer's recommendations and recorded in the log book.

2.8.10 Procedures for refrigerant management, including adding and recovering refrigerant charge, leak detection and the means adopted to control the loss and leakage of refrigerants, are to be established and implemented.

2.8.11 Refrigerant inventory and log book records are to be maintained, covering:

- Refrigerant added to each system.
- Refrigerant leaks, including remedial actions.
- Refrigerant recovered and storage location.
- Refrigerant disposal including quantity and location.
- Details of personnel suitably experienced or with an applicable qualification for maintenance of the onboard refrigerant system(s), including relevant certification.

2.8.12 After a leak has been identified, repaired and recorded, it is to be rechecked prior to the system entering normal service. All applications, independent of charge size, are to be checked for leakage within one month after a leak has been repaired to ensure that the repair remains effective.

2.8.13 Records demonstrating the implementation of the operational procedures specified in 2.8.16, as applicable, are to be maintained. These records are to be kept on board for a minimum period of three years, in a readily accessible form, and are to be available for inspection by LR Surveyors, as required.

2.8.14 A refrigerant log book is to be maintained for the lifetime of the system. It must record the quantity and type of refrigerant installed and the quantities added and recovered during servicing, maintenance and final disposal.

2.8.15 All personnel involved in the following activities must be suitably experienced or possess an applicable qualification:

- installation, servicing or maintenance of the refrigeration equipment covered by the **ECO** Notation;
- checking such equipment for any leakages of refrigerant gases; or
- repairing, or carrying out work to prevent, such leakages.

2.8.16 The following plans and documents are to be submitted:

- Details and location of each permanently installed refrigeration system. Mass of refrigerant charge in each system and the refrigerant designation (e.g., R-134a);
- Refrigeration plant general arrangement drawing showing the number and location of refrigerant leak detectors;
- Sample refrigerant leak testing record book;
- Refrigerant plant general arrangement drawing showing the number and location of leak detectors;
- Operational procedure for refrigerant management including adding and recovering refrigerant charge, leak detection and sample log book;
- Sample refrigerant inventory and log book.

## 2.9 Emissions of sulphur oxides, SO<sub>x</sub> character

2.9.1 For assignment of the **SO<sub>x</sub>** character, all fuel used on board is to be:

- distillate with a sulphur content not exceeding 0,10 per cent m/m; or
- an alternative fuel or a hybrid fuel management solution which has a resulting sulphur content which is not to exceed 0,10 per cent sulphur m/m.

2.9.2 An oil fuel management system is to detail the maximum sulphur content to be specified when ordering oil fuels and the means adopted to verify that the sulphur content of oil fuels supplied meets that requirement.

2.9.3 Where testing to determine the sulphur content of fuel received on board is to be carried out, a representative sample is to be drawn at the time of delivery from the ship's bunker manifold using the manual or automatic sampling methods defined in ISO 3170 or 3171, or their national respective equivalents. Fuel sulphur content is to be subsequently determined using the laboratory test method ISO 8754:2003: *Determination of sulphur content – Energy-dispersive X-ray fluorescence spectrometry*.

2.9.4 The following plans and documents are to be submitted:

- Bunker specification that will be used to purchase fuel for the ship.

## Section 4.3 Survey requirements

### 4.1.3.1 Initial Survey and Audit

4.1.1 3.1.1 Following satisfactory review of the plans and other information submitted (~~see 1.3~~), an **EP ENV** Initial Survey is to be undertaken for ships under construction or in service.

4.1.2 3.1.2 At the **EP ENV** Initial Survey, the Surveyor is to be satisfied that the requirements of these Rules, ~~including those relating to any requested supplementary characters,~~ are complied with. The Surveyor is to verify that the hull and machinery arrangements are in accordance with the approved documentation. The installed equipment, together with associated control and alarm systems, is to be demonstrated under working conditions.

4.1.3 3.1.3 Following the successful completion of the Initial Survey, the **EP ENV** notation may be ~~provisionally~~ assigned to a ship. The ~~provisional~~ **EP ENV** notation will be valid, in the first instance, for a period not exceeding ~~6~~ 12 months. During this period, an audit of the procedures as required by these Rules is to be undertaken. This audit is to be performed after the procedures have been fully implemented, subjected to internal audit and have generated at least 3 months of records under in-service conditions.

4.1.4 3.1.4 Audits are to confirm by direct observation, examination of internal audit reports and scrutiny of records that each of the procedures have been implemented effectively over the preceding period. It is also to be verified that:

- the required resources and equipment have been provided; and
- the ship's staff are aware of their duties and responsibilities, and can perform the assigned tasks.

4.1.5 ~~The full EP notation will be assigned following satisfactory completion of the audit.~~

### 4.2 3.2 Periodical Surveys and Audits

4.2.1 3.2.1 **EP ENV** Annual Surveys are to be held on all ships to which the **EP ENV** notation applies within three months of each anniversary for assignment of the ~~full~~ **EP ENV** notation.

4.2.2 3.2.2 At the **EP ENV** Annual Survey, the Surveyor is to be satisfied that the arrangements and equipment comply with these Rules. As far as possible, the installed equipment, together with associated control and alarm systems, are to be demonstrated under working conditions. Additionally:

- where changes to arrangements or equipment fitted to meet the requirements of these Rules have been made, it is to be verified that these changes are in accordance with approved documentation; and
- records for the preceding 12 months are to be reviewed.

4.2.3 3.2.3 **EP ENV** Audits ~~are to be held at either the second or third anniversaries of the completion of the Initial or Renewal Surveys.~~ **EP** Audits are to be undertaken in accordance with the requirements given in 4.1.4 3.1.4.

4.2.4 ~~All ships to which the EP notation applies are also to be subjected to EP Renewal Surveys in accordance with the requirements given in 4.2.5. These surveys become due at five yearly intervals, the first being five years from the completion of the Initial Survey.~~

3.2.4 Where the Periodical Surveys and audits are not completed in accordance with 3.2.1 the **ENV** notation will be suspended. Re-instatement will be subject to surveys being held appropriate to the age of the ships and the circumstances of the case.

4.2.5 ~~At the EP Renewal Survey, in addition to the survey requirements in 4.2.2:~~

- ~~continued compliance with the NO<sub>x</sub> emission limits specified in 2.2.2 or 2.2.3 is to be demonstrated; and~~
- ~~a satisfactory audit is to be undertaken in accordance with the requirements given in 4.1.4.~~

### 4.3 3.3 Change of Naval Authority

4.3.1 3.3.1 Where the Naval Authority changes, the **EP ENV** notation will be suspended.

4.3.2 3.3.2 The new Naval Authority may adopt the previously approved procedures as required by these Rules or may compile new procedures which would need to be submitted for approval.

4.3.3 3.3.3 Following implementation of the approved procedures, an audit, in accordance with the requirements in 4.1.3 3.1.3 and 4.1.4 3.1.4, is to be undertaken.

4.3.4 3.3.4 The **EP ENV** notation will be re-assigned following successful completion of the audit provided that the ~~general~~ requirements given in 2.1.1 are complied with.

## Volume 3, Part 3, Chapter 6

### Pollution Prevention

Effective date 1 January 2014

#### ■ Section 1

#### Scope

##### 1.1 Philosophy

1.1.1 The purpose of this Chapter is to provide a methodology for confirming that a naval ship meets the applicable requirements of the International Maritime Organisation's MARPOL Conventions for the protection of the environment.

1.1.2 Compliance with this Chapter is optional. A ship meeting the requirements of this Chapter will be eligible for an appropriate class notation, which will be recorded in the *Register Book*.

1.1.3 This Chapter details the Regulations of MARPOL those Conventions that are applicable to naval ships for the purposes of these Rules, and details how these are to be complied with.

##### 1.2 Application

1.2.2 As a minimum, compliance with the requirements of these Rules POL (I, AFS) are to be satisfied as part of as a prerequisite for the EP ENV notation included in Pt 2, Ch 2.

##### 1.3 Structure of the notation

1.3.1 Where all applicable Conventions are currently complied with, the notation **POL** will be eligible for a 'Star' endorsement to indicate that the arrangements on board are in accordance with National Administration requirements. This does not necessarily denote automatic endorsement by the National Administration. The 'Star' endorsement indicates full compliance with all current applicable Conventions in force as applied to commercial vessels registered with a Flag Administration, based on the dates indicated in the Conventions. Characters representing all of the applicable Conventions are included in brackets, e.g., **(I, IV, V, VI, AFS)**. Agreed Exceptions would be allowed with this notation; however, the 'Star' endorsement would not be assigned if an Exemption has been agreed, see Vol I, Pt 1, Ch 2,3.11.

1.3.2 Where a ship is not fully compliant with all relevant requirements of the Conventions, the **POL** notation will be assigned without the 'Star' endorsement. Only those characters that represent the Conventions with which the ship currently complies will be assigned. The keel laying date will be used as the Date of Application. Agreed Exceptions would be allowed with this notation; however, a convention character would not be assigned if an Exemption has been agreed or the convention implementation dates have not been complied with.

1.3.3 The applicable convention characters are shown in Table 6.1.1.

**Table 6.1.1 Convention characters available with POL notation**

POL convention character	Description
<b>I</b>	Compliance with MARPOL Annex I Oil pollution
<b>II</b>	Compliance with MARPOL Annex II where ships carry chemical cargoes in bulk. Replenishment tankers carrying substances other than fuel oils
<b>III</b>	Compliance with MARPOL Annex III where ships carry dangerous goods in packaged form. Replenishment stores ships
<b>IV</b>	Compliance with MARPOL Annex IV Sewage
<b>V</b>	Compliance with MARPOL Annex V Garbage
<b>VI</b>	Compliance with MARPOL Annex VI Emissions to Air
<b>AFS</b>	Compliance with Convention for the control of Harmful Anti-Fouling Systems on Ships, 2001

##### 1.4 Ongoing maintenance of the notation

1.4.1 Once awarded, the notation will remain assigned. However, when retrospective legislation, such as the Ballast Water Management Convention, comes into force, the ship will require assessment for compliance. If the convention requirements are met, the applicable convention character would be applied (e.g., **BWM**). If the convention requirements are not met then the 'Star' endorsement would be removed if currently assigned.

#### ■ Section 2

#### Requirements for pollution prevention arrangements

##### 2.1 General requirements

~~2.1.2 In addition, Certificates of Compliance will be provided where the arrangements are found in accordance with Section 5. (The MARPOL requirements detailed in Section 5 have not been ratified at IMO to date).~~

~~2.1.3~~ 2.1.2 Where the **POL** notation is to be assigned, an **LMC** notation must have been assigned, see Ch 1,1.1.2.

## ■ Section 3 Plans and particulars

### 3.1 Design statement

3.1.1 The design intent of any pollution prevention system required by the regulations is to be submitted and is to include all necessary supporting information with:

- (a) The required class notation, **POL**, ~~or Certificate of Compliance to MARPOL Annex IV or VI. If a military distinction notation is required this is also to be declared.~~ indicating either that the ship intends to comply with all applicable IMO Conventions for the protection of the environment (and hence would be eligible for the 'Star' endorsement) or list those Conventions that the ship intends to comply with.
- (b) Details of the operational profile of the ship, to include manning provisions and training levels.
- (c) A description of each mode of operation of the systems in each identifiable potential pollution of the sea or air scenarios.

The design statement is to be agreed by the designer and Owner/Operator.

### 3.2 Design declaration

3.2.1 In addition to submission of an acceptable Concept Statement, a Design Disclosure ~~is required for submission to and acceptance~~ should be submitted to and accepted by Lloyd's Register. The Design Disclosure is to include, but is not ~~be~~ limited to:

- (a) a statement of all design standards used in the design, manufacture, installation and testing of pollution prevention equipment and systems;
- (b) a proposed list of all surveyable items together with any additional recommendations from equipment/component manufacturers. Evidence is also to be provided that all surveyable items of equipment have approval certificates;
- (c) details of the proposed survey and maintenance regime;
- (d) evidence of compliance with the Objectives and Goals defined in ~~Sections 4 and 5~~ Section 4. This may be in the form of compliance with prescriptive Rules, Concessions, Alternative Design Justification Reports or an acceptable combination of all three, see *also* Ch 1,2.3 and Ch 1,6;
- ~~(e) details of the Hazard Identification process and Class related hazards are to be submitted. A hazard identification system is to be in place at the design stage whereby all hazards identified are recorded. If application of these Rules has been identified as a hazard avoidance/mitigation measure then details are to be submitted;~~
- ~~(f)~~ (e) details of equipment configurations that are safe for operators and users;
- ~~(g)~~ (f) details of the proposed test procedure required to demonstrate functionality at the time of commissioning.

## ■ Section 4 Prevention of pollution by oil and garbage

### 4.1 Applicable Regulations of MARPOL Annex I (Oil Pollution)

4.1.1 ~~The following Regulations and associated requirements are applicable to naval ships:~~ All regulations of MARPOL Annex I are to be complied with.

- ~~(a) Regulation 9, The control and discharge of oil.~~
- ~~(b) Regulation 10, Methods of prevention of oil pollution from ships while operating in special areas.~~
- ~~(c) Regulation 14, Segregation of oil and water ballast and carriage of oil in forepeak tanks.~~
- ~~(d) Regulation 16, Oil discharge monitoring and control system and oil filtering equipment.~~
- ~~(e) Regulation 17, Tanks for oil residues (sludge).~~
- ~~(f) Regulation 19, Standard discharge connection.~~
- ~~(g) Regulation 20, Oil record book.~~
- ~~(h) Regulation 26, Shipboard oil pollution emergency plan.~~

### 4.2 Applicable Regulations of MARPOL Annex V (Garbage Pollution) Applicable Regulations of MARPOL Annex II (Noxious Liquid Substances in Bulk)

4.2.1 ~~All regulations of MARPOL Annex V are to be complied with.~~ If applicable all regulations of MARPOL Annex II are to be complied with.

### 4.3 Applicable Regulations of MARPOL Annex III (Harmful Substances Carried in Packaged Form)

4.3.1 If applicable all regulations of MARPOL Annex III are to be complied with.

### 4.4 Applicable Regulations of MARPOL Annex IV (Sewage)

4.4.1 All regulations of MARPOL Annex IV are to be complied with.

### 4.5 Applicable Regulations of MARPOL Annex V (Garbage)

4.5.1 All regulations of MARPOL Annex V are to be complied with.

### 4.6 Applicable Regulations of MARPOL Annex VI (Air Pollution)

4.6.1 All regulations of MARPOL Annex VI are to be complied with.

**4.7      Applicable Regulations of Convention for the Control of Harmful Anti-Fouling Systems**

4.7.1      All regulations of the AFS Convention are to be complied with.

**■      ~~Section 5~~**

**~~Prevention of pollution by sewage and pollution of the air from ships~~**

**~~5.1      Regulations of MARPOL Annex IV (Sewage Pollution)~~**

~~5.1.1      Where required by the Naval Authority, all regulations of MARPOL Annex IV are to be complied with.~~

**~~5.2      Regulations of MARPOL Annex VI (Pollution of the Air)~~**

~~5.2.1      All relevant regulations of MARPOL Annex VI are to be complied with.~~



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